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RESEARCH ARTICLE



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Impact and sustainability of master trainer-led obstetric emergency skills training in Uganda: a qualitative study

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ABSTRACT

Background: Maternal mortality remains a major challenge in Uganda, where the maternal mortality ratio is 189 per 100,000 births – fifty time higher than in the UK. The Royal College of Obstetricians and Gynaecologists' Excellence in Obstetric Skills (EOS) and Resilience in Obstetric Skills (ROS) courses used a train-the-trainer model, creating locally based Master Trainers (MTs), to strengthen management of obstetric emergencies in Uganda. This qualitative study explored the perceived impact, benefits and sustainability of these courses from the perspectives of Ugandan MTs and UK-based stakeholders.

Methods: A descriptive, cross-sectional qualitative study using semi-structured interviews was conducted with seven purposively sampled participants: five Ugandan MTs and two UK-based stakeholders involved in the programme's development or support. Interviews were conducted via Zoom, transcribed, anonymised and analysed using inductive thematic analysis, following Braun and Clarke's approach, by two independent researchers, with disagreements resolved by discussion and input from senior authors.

Results: Four overarching themes were identified: expected outcomes including improved clinical knowledge, escalation and knowledge cascading; unexpected outcomes including career development, improved patient communication and enhanced physical environments; challenges, including variable skills uptake, course duration, funding constraints and staff attrition; and sustainability, spanning funding, government accreditation, workforce retention, mentorship and integration into continuing professional development. Participants perceived increased confidence in managing emergencies and anecdotal reductions in maternal mortality, alongside persistent barriers including a lack of formal accreditation, inconsistent funding and understaffing that limited lasting impact.

Conclusions: Participants perceived the EOS/ROS courses to have benefits beyond clinical skills. Reported improvements in maternal care and mortality were anecdotal and do not establish a causal relationship. Sustainable delivery of the Master Trainer model may require formal accreditation, dedicated funding and integration into continuing professional development and ongoing skills development.

PLAIN LANGUAGE SUMMARY

This study explored what Ugandan "Master Trainers" and UK-based team members thought about two training courses that taught doctors and midwives in Uganda how to manage emergencies during childbirth. We spoke to seven people who had taken part in, or helped run, the courses. They told us the training made them feel more confident, improved teamwork and communication, and helped them recognise problems earlier. They also said it helped their careers, helped them pass on new skills to colleagues, and helped them talk to mothers more sensitively, including when sharing difficult news. People also described problems that made it hard to keep the benefits going, such as not enough money, not enough staff, staff leaving their jobs,

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and no official recognition of the Master Trainer role. Overall, the people we spoke to felt the courses could help improve care for mothers and babies, but this will depend on stronger local leadership, government support, and long-term funding.

Introduction

Maternal mortality (MM), defined as “direct or indirect deaths related to or aggravated by pregnancy or its management” remains a major global health challenge (World Health Organisation 2023). Approximately 99% of maternal deaths occur in low- and middle-income countries, with Sub-Saharan Africa accounting for roughly half worldwide (World Health Organisation 2023; Aloba et al. 2022). Uganda’s maternal mortality ratio (MMR) of 189 deaths per 100,000 live births is fifty times higher than the United Kingdom’s (Babughirana et al. 2020). Many of these deaths are preventable, resulting from obstetric emergencies such as sepsis, pre-eclampsia and postpartum haemorrhage, but this potential is constrained by inadequate training, workforce shortages and limited institutional support (Royal College of Obstetricians and Gynaecologists 2021).

Optimising recognition and management of obstetric complications could reduce MM by approximately 14.3% (Ward et al. 2023), and community-based intervention packages embedded within local health systems have shown similar benefit (Lassi and Bhutta 2015), underscoring the importance of strengthening health system delivery alongside clinical training (Figure 1).

The Excellence in Obstetric Skills (EOS) programme was delivered in Uganda’s Masaka district from 2014 to 2016, followed by the Resilience in Obstetric Skills (ROS) programme in 2017, as part of the wider Essential Obstetric Skills programme (2014–2018) (Royal College of Obstetricians and Gynaecologists 2021). These courses aimed to strengthen healthcare workers’ competence in managing obstetric and neonatal emergencies (Royal College of Obstetricians and Gynaecologists 2021; Smith and Firth 2011). Using a train-the-trainer approach, selected participants became Master Trainers (MTs) – locally based

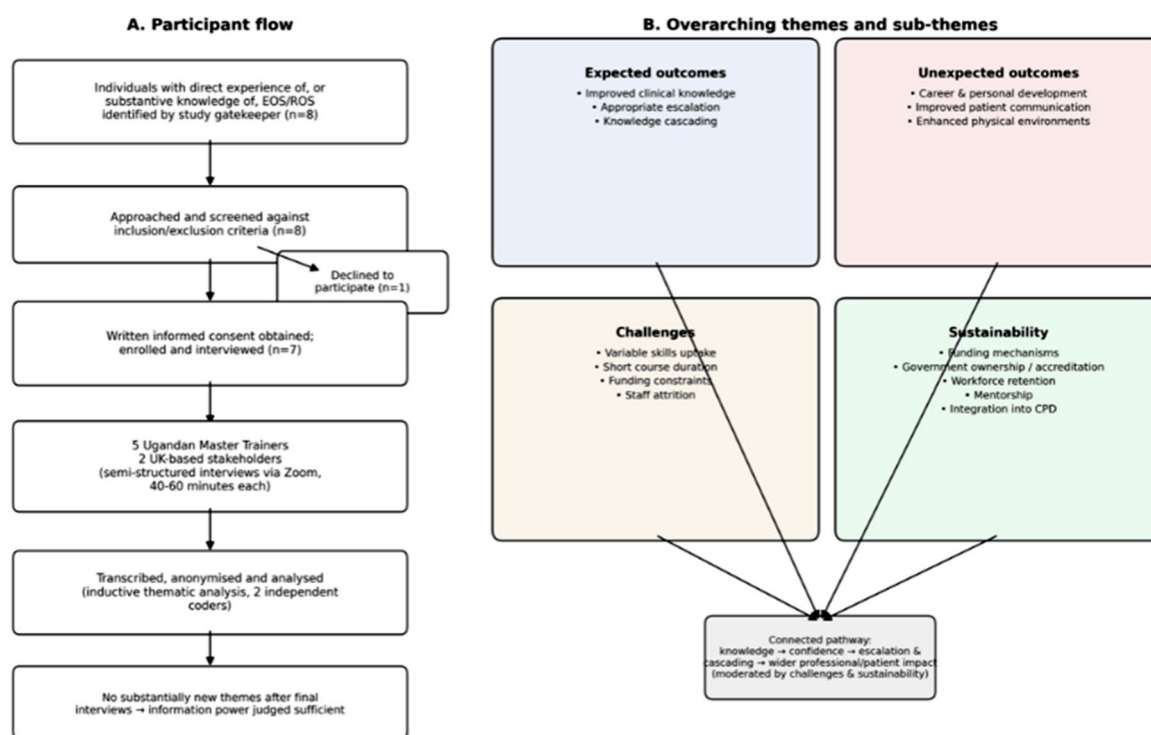


Figure 1. (A) Flow of participants through recruitment, interview and analysis. (B) Overarching themes and sub-themes identified through inductive thematic analysis, with the connecting pathway described in Results. EOS=Excellence in Obstetric Skills, ROS=Resilience in Obstetric Skills, CPD=continuing professional development.

healthcare workers responsible for delivering and sustaining the programme within their own facilities (Figure 2)—to promote local ownership, reduce reliance on international input and support progress towards Millenium Development Goals (Royal College of Obstetricians and Gynaecologists 2021).

Early reports suggest the courses improved clinical knowledge and achieved high participant satisfaction (Royal College of Obstetricians and Gynaecologists 2021; Royal College of Obstetricians and Gynaecologists 2025), consistent with skills-and-drills training elsewhere in Sub-Saharan Africa (Pattinson et al. 2019; Evans et al. 2014; Bac et al. 2019), although evidence from India suggests such training alone may be insufficient without addressing broader health system constraints (Varghese et al. 2016). Implementation research is therefore needed to understand how best to deliver, scale and sustain such initiatives in resource-constrained contexts (Orjingene and Morgan 2020). However, little is known about how MTs and UK-based stakeholders themselves perceive the broader impact, feasibility and sustainability of the train-the-trainer approach beyond aggregate measures of knowledge gain—including its personal and professional consequences for MTs, and the infrastructure needed for it to endure once external support ends.

This study therefore addresses the following research question: how do Ugandan Master Trainers and UK-based stakeholders perceive the wider impact, benefits and sustainability of the EOS and ROS courses? As a descriptive qualitative study, this work was exploratory rather than hypothesis testing, aiming to generate an in-depth, contextualised understanding of participants' experiences that can inform future programme design.

Methods

Study design and participants

A descriptive, cross-sectional qualitative design was used to explore the perceptions and experiences of MTs and UK-based stakeholders. To capture different perspectives on programme impact, MTs were interviewed about personal and professional impacts, whereas interviews with UK-based stakeholders focussed on infrastructure, implementation and funding, which were particularly relevant for sustainability.



Figure 2. Schematic of the EOS/ROS train-the-trainer model. EOS=Excellence in Obstetric Skills.

The EOS and ROS courses

The EOS programme was delivered in Uganda from 2014 to 2016, followed by the ROS programme in 2017 as part of the wider Essential Obstetric Skills programme (2014–2018). The three-day programme combined didactic teaching with simulation and hands-on stations covering obstetric and neonatal emergencies, reinforcing participants' knowledge and confidence while also strengthening communication skills. Following completion, MTs continued to deliver training within their own and other facilities; pre- and post-course assessments quantified learning gains, and structured reflection and evaluation informed ongoing refinement of course content and delivery.

Data collection

Semi-structured interviews (SSIs) supported the exploratory nature of the research and allowed flexibility in questioning (Appendix A), capturing a broad range of views (Given 2008; Gale et al. 2013). Table 1 outlines the core interview questions and the thematic domains they were designed to explore.

The interview questions were developed by the research team (RH, HB), informed by the study aims and a review of existing literature and EOS/ROS programme reports. The guide was not formally piloted or externally validated, which we acknowledge as a limitation. Seven participants were interviewed: five MTs and two UK-based stakeholders, purposively sampled via a study gatekeeper for their direct experience of, or substantive knowledge of, the EOS/ROS courses. Given this small and specialist population involved in the programme, sample size was determined primarily by the availability of information-rich participants rather than a pre-specified target; however, no substantially new themes emerged in the final interviews, indicating that the key perspectives relevant to the study aims had been captured (Figure 1A).

Potential participants were screened against inclusion/exclusion criteria and provided information sheets and consent forms; one approached individual did not participate. Written informed consent was obtained and reaffirmed verbally before each interview; participants could withdraw up to 48 hours post-interview (none did), and all consented to publication of anonymised quotations (Figure 1A and B).

Interviews were conducted by two researchers (HB: 3 interviews; RH: 4), both medical students at the time and subsequently Foundation Year 1 doctors. Neither had been involved in the delivery or implementation of the EOS/ROS programme, and neither had a prior relationship with any of the participants, funders or the RCOG programme team; both were recruited to the study independently of the programme, and neither had formal qualitative research training. A brief reflexive approach was adopted, recognising that the interviewers' clinical background, relative inexperience in qualitative methods, and position as early-career doctors could influence the framing of questions and interpretation of participants' accounts. This positionality was discussed openly with the senior authors throughout data collection and analysis, to guard against uncritical acceptance of positive accounts.

Table 1. Core interview questions and the thematic domains they were designed to explore.

Interview question	Thematic domain explored
When was your EOS and ROS training?/How long have you been an MT and for which organisation?	Background and context
What is your current role?	Background and context
Can you tell me about your experiences of the EOS and ROS courses?	Overall course experience
What were the main outcomes from the courses?	Expected outcomes
What were the main challenges from the courses?	Challenges
Were there any unexpected outcomes?	Unexpected outcomes
Which obstetric skills did you learn and how did this benefit your practice?	Expected outcomes
What does your role as an MT entail and what are the challenges?	Challenges/knowledge cascading
How did the EOS/ROS impact your educational activities as MTs?	Knowledge cascading
How is funding sourced to train other healthcare workers?	Sustainability – funding
Do you think teaching through the Master Trainer programme can produce change and attain sustainability?	Sustainability
Why is sustainability of this project important?	Sustainability

MT=Master Trainer; EOS=Excellence in Obstetric Skills; ROS=Resilience in Obstetric Skills.

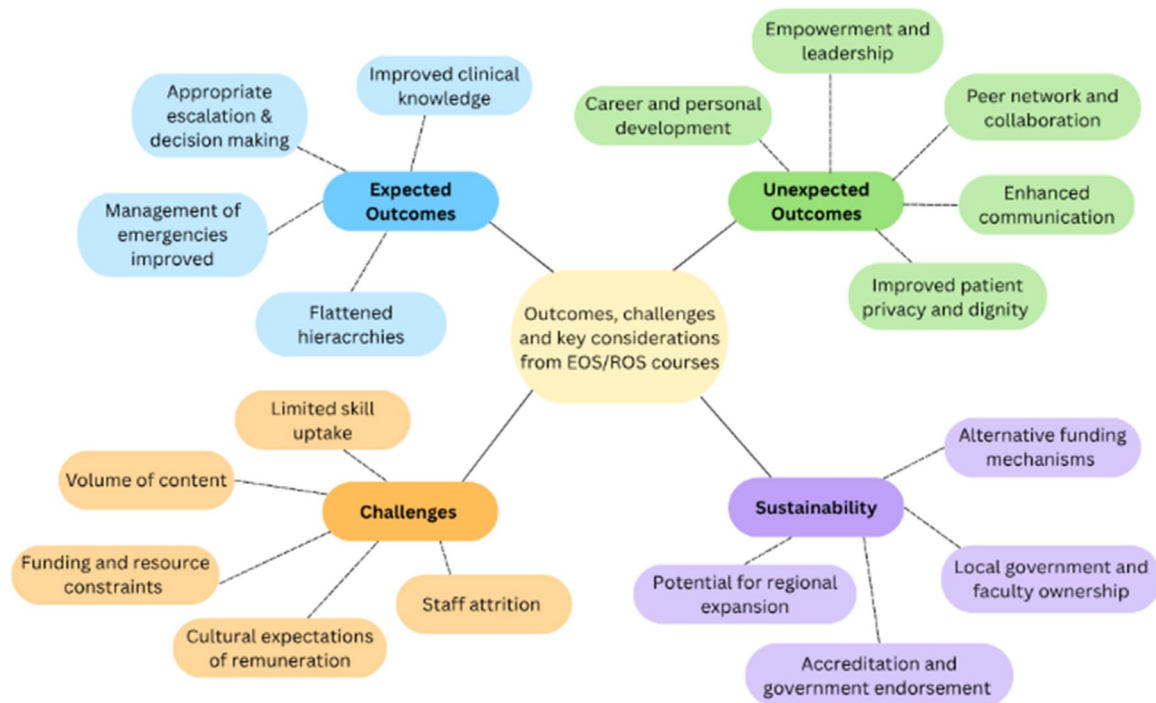


Figure 3. Thematic map summary.

Table 2. Participant characteristics, reported in aggregate to minimise the risk of re-identification given the small sample size.

Characteristic	MTs (n=5)	UK-based stakeholders (n=2)
Role/profession	Medical clinical officers (n=2), clinical sister (n=1), midwife (n=1), medical director (n=1)	Clinical/academic specialist (n=1); programme manager (n=1)
Gender	3 male, 2 female	2 female
Prior clinical experience before MT role (years)	3–8 (range)	N/A
Year of EOS/ROS training	2016–2018	N/A
Duration of MT role at time of interview (years)	5–6 (range)	N/A
Setting of work in Uganda	Community health centres and hospitals across three districts	N/A

MT=Master Trainer; EOS=Excellence in Obstetric Skills; ROS=Resilience in Obstetric Skills; N/A=not applicable. Characteristics are reported in aggregate to minimise the risk of participant re-identification given the small sample size.

Interviews lasted between 40 and 60 minutes and were conducted via encrypted Zoom, then transcribed, checked against recordings, and anonymised before recordings were deleted; no repeat interview, field notes or additional observers were involved. Transcripts were not returned to participants for review, which we acknowledge as a limitation. Given the small sample size ($N=7$) and inclusion of demographic detail, care was taken to minimise identifiable information given the risk of re-identification (Table 2).

Data analysis

A qualitative, inductive thematic analysis was undertaken, following Braun and Clarke's approach ((Braun and Clarke 2006). Both researchers independently read all seven transcripts repeatedly, generating a priori codes (informed by the literature review and study aims) and emerging codes (developed through iterative reading of the transcripts); one used NVivo, the other coded manually. Related codes were grouped into candidate sub-themes, reviewed against the dataset, and organised into overarching themes. Coding and interpretation were compared between researchers, with disagreements and alternative interpretations discussed and resolved by consensus, with input from the senior authors where needed. Coding occurred mainly at the semantic level. No substantially new themes emerged in the final interviews, suggesting that the principal perspectives relevant to the study aims had been captured.

Core outcome sets and patient involvement

No core outcome set exists for qualitative evaluations of this kind; primary outcomes of interest (clinical impact, feasibility, challenges, sustainability) were therefore defined a priori from the study aims. Patients were not directly involved in study design or analysis, though patient care outcomes – including respectful maternity care and communication around breaking bad news – emerged as themes from participant narratives.

Ethical considerations

Ethical approval was obtained from the University of Leeds Medical Research Ethics Committee (reference MREC 21–045) and the Kitovu Hospital Ethics Committee (reference 2240). Written informed consent was obtained from all participants, as described above.

Results

Following the formal EOS/ROS programme, MTs continued to deliver training within their own and other facilities; the frequency and total number of courses delivered varied between individuals and was not systematically recorded.

Analysis identified four overarching themes, summarised in [Figure 1B](#) and [Figure 3](#): expected outcomes, unexpected outcomes, challenges and sustainability. Improved knowledge and confidence supported clinical decision-making and knowledge cascading, while the wider training environment contributed to professional development, teamwork and patient-centred care. These benefits were, in turn, moderated by limited opportunities for continued practice, staff attrition and inconsistent funding. Reported changes in clinical outcomes throughout reflect participants' perceptions rather than objectively measured outcomes.

Expected outcomes

MTs reported enhanced clinical knowledge, including earlier detection and management of obstetric emergencies, consolidated through simulated practice.

"It changed the practice, how we felt about managing emergencies we meet daily... It helped us get the best outcomes for mothers and newborns"

Teaching on breech births, postpartum haemorrhage and neonatal resuscitation (the "golden minute") was perceived as particularly valuable, and linked by participants to earlier recognition of complications; as above, this represents participants' own attribution rather than an objectively measured outcome.

"Low maternal mortality especially in places we have trained the obstetric teams. The midwives can identify the women with problems early enough"

Hands-on simulation supported more systematic use of Early Warning Scores and timely escalation, and skills were readily shared with other healthcare workers, extending the courses' reach beyond initial training sites.

"I've been to Kalangala, we carried out a one-week course and people were grateful... having hands on simulation, the RCOG left us with models"

UK Stakeholders observed that involving a range of healthcare providers promoted multidisciplinary teamwork and helped flatten traditional hierarchies, and perceived that Ugandan government recognition of MMR reductions reflected enhanced technical skills and strengthened accountability. Taken together, improved knowledge and confidence supported recognition of when to escalate care and a willingness to cascade skills – a single, mutually reinforcing pathway rather than discrete benefits.

Unexpected outcomes

Transferable skills and career progression emerged as unanticipated benefits, reflected in participants' subsequent roles training and mentoring colleagues, supported by an active WhatsApp peer network.

"It was a good opportunity to be part of that training as it helped me in my career... it helped me push on, train others, mentor others"

Enhanced communication skills, particularly around breaking bad news, were highly valued, alongside improvements in labour ward environments, antenatal counselling and risk-based planning of delivery.

"We were taught how to do it very well; confidence was built in people"

UK stakeholders described marked transformation among some trainers, who developed confidence and agency and became catalysts for further change, with mutual learning between UK-based and local professionals strengthening coordination between facilities.

"She turned out to be brilliant in the end... she just changed completely and became really quite feisty and very aware of maintaining standards and giving good care."

These unexpected outcomes extended the clinical benefits above into the professional and interpersonal domain, suggesting effects propagated beyond the specific clinical content taught.

Challenges

Variable skills uptake was attributed to limited awareness of the consequences of outdated practice and the perception that new skills required more time or resources.

"The most challenging issue is inclining trainees towards change in practice...they perceive this new skill as something that requires more time or resources"

Short course duration, funding constraints and administrative burden further limited follow-up and reflection time, and staff attrition compounded these pressures by removing invested skills from the system. UK stakeholders similarly identified funding as the most pertinent obstacle, especially where participants expected payment, and described a delicate balance between maintaining programme quality and the clinical time trainers were giving up.

"People want to be paid to do something...they don't feel like they should just do it out of the goodness of their hearts."

Wider systemic barriers – understaffing, inadequate infrastructure and low government investment – limited translation of individual skills gains into sustained care.

"There'd be one midwife to eight patients in labour...she can't physically deliver an appropriate standard of care."

The COVID-19 pandemic and cuts to overseas development aid disrupted continuity. Read together, these challenges describe a single underlying constraint – that skills are difficult to sustain within health systems lacking the staffing, funding and administrative capacity to support their ongoing use – rather than a set of unrelated problems.

Sustainability

The systems-capacity constraint identified above extends into how participants understood sustainability itself. Participants viewed sustainability as depending on five interrelated domains: funding, government ownership and accreditation, workforce retention, mentorship, and integration into continuing professional development (CPD).

The RCOG, Ministry of Health and NGOs provided essential funding, but participants were concerned about future funding and ongoing evaluation. The main funder's no-per-diem policy contrasted with other NGOs practices, creating a sense of inequity; the RCOG explored non-monetary incentives instead.

"The only thing they demand is that at the very least you give them tea and mandazi... when we stopped funding it, they stopped coming until it was reinstated."

Formal accreditation and government recognition were seen as central to legitimising the MT role and to attracting investment.

"To have proper sustainability, accreditation by the government of our training would be key..."

Staff attrition and workforce shortages undermined sustainability by removing trained individuals and limiting teaching time, while ongoing peer mentorship (including the RCOG WhatsApp group) helped sustain learning even after funding ended, and were viewed as a low-cost, scalable mechanism for continued knowledge exchange.

Participants proposed embedding EOS/ROS content within existing CPD structures, alongside participant fees, blended learning and local venues to reduce reliance on episodic external funding.

"The quality of the training was superb... they were able to contextualise the training so expertly because they understand exactly what's going on in, in local hospitals."

Across these domains, participants returned to one underlying message: technical skill gained through the courses could be sustained only if matched by structural investment – financial, regulatory and relational – in the systems and people delivering it.

Discussion

Main findings

Participants perceived the EOS/ROS courses to be associated with improvements in maternal care and MMR, though these accounts are empirical and cannot establish causality. Four themes emerged: expected outcomes (knowledge, escalation, knowledge cascading), unexpected outcomes (career development, patient communication, physical environment), challenges (skills uptake, course duration, funding, attrition), and sustainability (funding, accreditation, retention, mentorship, CPD integration). This is the first study in this setting to explore outcomes beyond MMR.

Interpretation of findings

The improvements in MMR reported here echo findings from South Africa, Malawi, Zanzibar and Tanzania, where skills-and-drills training improved management of obstetric emergencies (Pattinson et al. 2019; Evans et al. 2014; Bac et al. 2019), although evidence from India suggests training alone may be insufficient without addressing broader health system constraints (Pattinson et al. 2019; Evans et al. 2014; Bac et al. 2019). The value of hands-on simulation training over lecture-based teaching is well supported: studies from Rwanda, Ghana, Brazil and Australia report similar effectiveness and satisfaction (Varghese et al. 2016), and a Bristol-based programme achieved a 75% reduction in neonatal injuries using high-fidelity simulation (Draycott et al. 2008).

Skill retention is a recognised concern: competency typically declines within six months of training, faster for practical than theoretical knowledge (Tang et al. 2016; Ameh et al. 2016), consistent with MTs' reports that their "skills sleep" without regular refreshers and supporting periodic re-validation, as used in UK disciplines such as Advanced Life Support and Advanced Trauma Life Support, which require revalidation every four years (Royal College of Surgeons of England 2025).

Simulation training has also been linked to improved team morale, with a Danish multi-disciplinary programme reporting a 45% reduction in midwifery sick leave attributed to improved competency and

reduced stress (Sørensen et al. 2009). Given that many Ugandan obstetric healthcare workers report feeling overwhelmed and unsupported due to workforce shortages, similar improvements in teamwork here may translate into reduced sick leave and improved staff retention (Royal College of Obstetricians and Gynaecologists 2021). Funding remains the largest limitation; “teach the teacher” models explored in Brazil and Ecuador have not yet demonstrated proven long-term effectiveness (Siaulys et al. 2019; Dresang et al. 2004).

Strengths and limitations

Strengths include the use of semi-structured interviews to capture anticipated and unanticipated outcomes, complementary MTs and UK stakeholder perspectives, and independent thematic coding by two researchers.

However, several limitations apply. All MTs worked in community settings, limiting generalisability to secondary/tertiary care, and the small sample ($N=7$) may have affected saturation, although no new themes emerged in later interviews (Figure 1A). Reported MMR improvements were anecdotal and cannot establish causality; RCOG’s own cited 14% reduction lacked transparency regarding confounders and methodology (Royal College of Obstetricians and Gynaecologists 2025). Confidence reports may reflect social desirability bias given educators’ presence during teaching. The interview guide was not piloted or externally validated, and transcripts were not returned for member checking. Both interviewers were early-career doctors with no formal qualitative research training, which despite reflexive practice, may have shaped interpretation. Finally, the programme used basic manikins without advanced features, and knowledge acquisition was not formally examined.

Areas for future research and recommendations

Sustainable MT-led delivery may require dedicated funding, government accreditation and CPD integration. Given reported skill decline without practice, and evidence that competency declines within approximately six months of training, faster for practical skills (Tang et al. 2016; Ameh et al. 2016), programmes could consider a six-monthly skills assessment and refresher training to support longer-term competency and knowledge retention; though the optimal interval remains to be tested prospectively.

Further research using objective clinical and patient outcome measures is needed to determine whether perceived improvements in knowledge translate into measurable outcomes, alongside evaluation of cost-effectiveness, dissemination beyond original sites, and feasibility of national or regional scale-up.

Conclusion

This qualitative study found that participants perceived the EOS/ROS courses to have benefits extending beyond clinical skills, including professional development, improved teamwork and patient communication. Alongside these, challenges relating to skills retention, funding, staff attrition and sustainability were reported. While participants reported perceived improvements in maternal care and MMR, these findings were anecdotal and cannot establish a causal relationship between the training programme and maternal mortality outcomes. These findings support the potential value of MT-led simulation training in low-resource settings, while highlighting the importance of sustainable funding, continued skills development and robust evaluation of longer-term outcomes.

Acknowledgements

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Ethics statement

Ethical approval was obtained from the University of Leeds (MREC 21-045) and the Kitovu Hospital Ethics Committee (2240).

Author contributions

CRedit: **Rebecca Hakim**: Data curation, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft; **Helen Bailey**: Formal analysis, Investigation, Methodology, Writing – original draft; **Nishel Mohan Shah**: Supervision, Writing – review & editing; **John Dalton**: Conceptualization, Supervision, Writing – review & editing.

Disclosure statement

The authors report no conflicts of interest

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Appendix A

Interview Questions:

1. When was your EOS and ROS training?
2. How long have you been a master trainer and what organisation do you work for?
3. What is your current role?
4. Can you tell me about your experiences of the EOS and ROS courses?
5. What were the main outcomes from the courses?
6. What were the main challenges from the courses?
7. Were there any unexpected outcomes?
8. Which obstetric skills did you learn and how did this benefit your practice?
9. What does your role as a master trainer entail and what are the challenges?
10. How did the ROS/EOS impact your educational activities as master trainers?
11. How is funding sourced to train other healthcare workers?
12. Do you think that teaching through the master trainer programme can produce change and attain sustainability?
13. Why is sustainability of this project important?